

# EVENT STRUCTURE AND DOUBLE HELICITY ASYMMETRY IN JET PRODUCTION FROM POLARIZED $P + P$ COLLISIONS AT $\sqrt{S} = 200$ GEV AT PHENIX

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One of the goals of the PHENIX experiment at RHIC is to determine the contribution of the gluon spin ( $\Delta G$ ) to the proton spin using longitudinally polarized proton+proton collisions. Jet production via  $g + g$ ,  $g + q$  and  $q + q$  scatterings is the dominant process in high-energy proton+proton collisions. The measurement of double helicity asymmetry ( $A_{LL}$ ) of jets or inclusive particles such as  $\pi^0$  provides the quantitative information on  $\Delta G$  with higher statistics. Particularly the measurement of jet is considered to better reconstruct the original parton kinematics and reach higher  $p_T$  and thus higher  $x_{Bj}$  with better statistical accuracy.

In the jet measurement, the existence of particles not originated from hard-scattered partons, which is called the underlying event, is important since it smears reconstructed jet kinematics. Understanding the underlying event itself is interesting because its amount is known to be enhanced when scattering energy is higher but its mechanism is not established yet. To investigate the effect of the underlying event, event structures such as particle multiplicity were measured and compared with those simulated with the PYTHIA event generator.

In this presentation, the methods of the jet measurement at PHENIX and the results of event structures and  $A_{LL}$  will be discussed.